2017
Annual Report

NH Fire Academy's Fire Station and Dormitory building after completion in 1997

New Hampshire Department of Safety
Division of Fire Standards and Training
& Emergency Medical Services

NH FSTEMS

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Introduction

The New Hampshire Division of Fire Standards and Training & EMS (FSTEMS) is responsible for training, educating and certifying emergency care providers and other first responders. Within the Division, three Bureaus oversee the state's Fire and EMS providers:

* The Bureau of Firefighter Training
* The Bureau of Certification and Support
* The Bureau of EMS

Over the last 20 years, the Division has expanded its facilities, equipment and certification programs. These improvements help NH's first responders to develop the enhanced abilities required to meet the diverse challenges they face as they protect NH's communities.

2017 marks the 20th anniversary of the addition of the Fire Station and Dormitory Building at the NH Fire Academy, as well as three major pieces of apparatus, the KME Quint, the KME 1250 G.P.M. Pumper, and the KME Rescue. These facilities and equipment have, and will continue, to play a major role in providing the very best training to thousands of first responders throughout the New England area.

Director's Message

NH Fire Standards and Training & EMS


Director Deborah Pendergast

Deborah A. Pendergast
Director

It is an honor to present the 2017 Annual Report of the Division of Fire Standards and Training & Emergency Medical Services.

In 2017, the Division of Fire Standards and Training & EMS served responders top quality training and education opportunities. We strive to meet the educational, certification and licensing needs of our state's emergency responders with customer service in mind.

We continue to collaborate closely with hospitals, injury prevention efforts, pre-hospital best practices and data collection projects to ensure that the citizens and visitors of NH are afforded the best care when an emergency medical need arises. I would like to extend my sincerest appreciation to our staff, instructors, volunteer committee members and our partner groups for their unrelenting efforts, commitment and cooperation in helping to make the Division one of the premier state training and credentialing agencies in the country.

For fire and rescue training and support services, 2017 was an exciting year as it marked the 23rd Anniversary of our Concord campus. We purchased a mini pumper with Federal grant funds, and began construction on our technical rescue container prop to expand training opportunities. We upgraded our auditorium, our classroom technology and HVAC systems. Our staff extends sincere appreciation to our volunteer committees, our Commission members and our stakeholders, for their commitment to quality fire training and education, and for the continued collaboration in helping to meet our student and department training needs. For this, I also appreciate and thank our large cadre of fire and rescue instructors who are so committed to safety and quality training.

In 2017 we had a nearly 11% increase in the number of student interactions through our online training modules, on campus trainings and seminars, and field delivery programs. We expect this to continue to increase as we offer more continuing education and initial program offerings. Looking to the future, I see two issues that will continue to have a profound effect on our emergency responders and the response community. One is the issue of recruitment and retention. Nationally, volunteerism in fire and EMS agencies is down 12% over the last 20 years. I hear from fire chiefs, directors and agency heads that it is becoming more and more difficult to adequately staff the shifts and apparatus to meet the emergency response needs of some local communities.

Second, incident diversity and complexity has escalated over the last 10 - 15 years, nationally and here in New Hampshire. Terms like "Safe Station" and opioid crises, or incidents such as the hospital shooting at Dartmouth, or nationally, the cities of Las Vegas and Newtown Connecticut, for example, will make you aware that quality, integrated training is needed to effectively respond to our current environment and community threats and needs. We are now placing a greater focus on trauma, data, training and capabilities.

Finally, because of the evolving demands placed on our responders, we have become well-aware that we as an organization need to adapt our focus to also include health, safety and emotional wellness of the students and organizations that we serve. I am proud of the team here at the Division and the many volunteers who serve on Fire and EMS committees and working groups. Together we can achieve so much!

Yours in service,

Director Deborah A. Pendergast

"Who you are tomorrow begins with what you do today" - T. Fargo

Community Partners

As mandated by state RSA 153-A , the Bureau of EMS works in conjunction with the three boards below to oversee the operation of a statewide system of emergency medical services. The boards are comprised of a diverse group of community members including healthcare professionals, emergency services providers, and representatives of various professional associations involved in the field of trauma and EMS.

Working together, the board members review the delivery of emergency medical services; they ensure that all care is provided according to recommended protocols. All protocols are reviewed regularly by the boards and revised as needed to reflect best practices.

NH Emergency Medical and Trauma Services Coordinating Board

The Coordinating Board is tasked with developing and routinely updating an operating plan for a statewide EMS system that reflects the abilities and needs of each municipality. Other mandated duties include:

- Assessing the availability, delivery and quality of emergency medical services
- Reviewing rules and submitting recommendations to the Commissioner when necessary
- Designating EMS regions and districts within the state
- Approving statewide trauma policies, procedures, and protocols
- Establishing minimum standards for EMS system performance and patient care
- Coordinating interstate cooperation and delivery of emergency medical and trauma services.

NH EMS Medical Control Board

The Medical Control Board is comprised of various members including a minimum of 5 physicians representing different geographic areas of the State of NH. The board assists and advises the coordinating board in the development of a comprehensive EMS system, by establishing/ maintaining minimum standards through policies, procedures and protocols. Serving as a liaison with medical personnel throughout the state, the board collaborates with other boards regarding best practices, such as the usage of prescription drugs by EMS providers. It also is responsible for protocols and procedures used by emergency medical care providers under their own licenses or through medical control.

NH Trauma Medical Review Committee (TMRC)

The TMRC is tasked with overseeing the establishment and continuous improvement of the NH Trauma System. The Committee routinely updates the adult and pediatric trauma system plan and care protocols, reviews statewide trauma system operations and delivery of care, and monitors adherence to guidelines/standards. Based on its reviews, the committee may make recommendations to the Coordinating Board regarding modifications of the trauma system plan. The committee may also assist trauma hospitals in developing/implementing trauma quality improvement programs.

Fire Standards and Training Commission

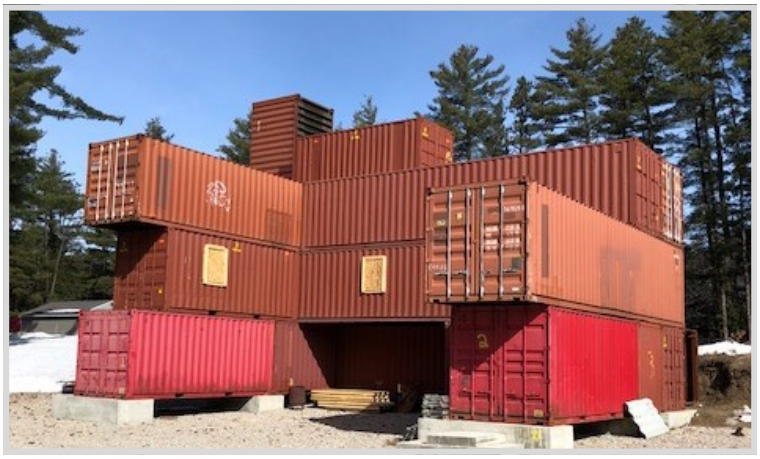
RSA 21-P:26 & 28 authorizes the formation of a 16 member, Fire Standards and Training Commission that is responsible for certifying that all fire service personnel meet minimum educational and training standards. The Commission oversees the development of firefighter training and monitors/updates training levels to meet standards set by the National Fire Protection Association (NFPA). The commission may also collaborate with other boards concerning fire education programs.

Facilities and Training

The J Building

Stone landscaping and other organizational improvements were among many changes 2017 brought to the Academy's Fire Drill -yard. The largest change was the J Building, named after long-time instructor Gary Johnson, which was created out of 13 Conex containers. The J Building's main purpose is to enhance both firefighter training as well as technical rescue skills.

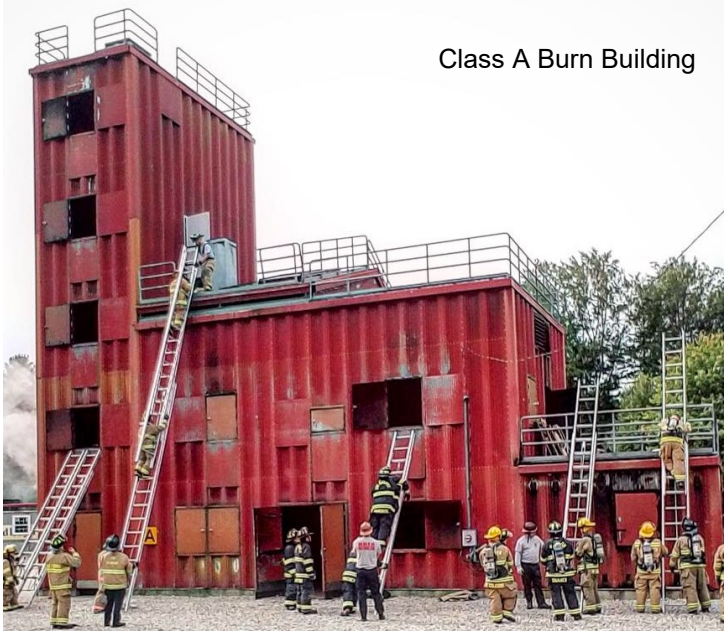
As seen from the C side, the J Building is a work in progress.



Training Simulators

The training simulators listed below enhance the training experience of our course attendees in the fire drill-yard.

- 2 story mercantile class "A" burn building - 5 story tower - 3 burn rooms
- The B Building - Propane-fired, two-story, live fire facility
- Flashover simulator
- Mobile SCBA maze trailer
- Propane-fired flammable liquids simulator
- Three operational sprinkler mockups
- Hazardous Materials Technician Support



Class A Burn Building

Facilities and Training (con't)

The ARFF

The mission of the NH Aircraft Rescue Fire Fighting Academy (ARFF) is to educate and provide realistic training for firefighters who respond to aircraft fires and other related aircraft emergencies and rescues. We do this by offering a NFPA 1003 Pro Board Airport Fire Fighting class and FAA Part 139.319 mandated, recurrent training to include Fuel Spill Trainer fires and Specialized Aircraft Fire Training (SAFT) evolutions.

In 2017, major upgrades to the ARFF facility included replacing the original computer system with a Human Interface Software conversion for the Fuel Spill Trainer and SAFT with associated components.

Other major improvements completed were:

- ◊ Gas Monitoring System Replacement
- ◊ Liquid Fuel Spill Manifold Replacement
- ◊ Fuel Spill Trainer and SAFT PLC migration

300 students from 15 airports throughout New England received ARFF training in 2017

Future upgrades include Fuel Spill Trainer, Thermocouple, Burner, and Rock replacement.

Combined Ops with the Fuel Spill Trainer

At right: Wheel Brake and Wing Engine Fire Attack on the SAFT

Below: Computerized Monitoring System with Human Interface Software

Bureau of Firefighter Training

The Bureau of Firefighter Training offers high quality, relevant and cutting edge programs to meet the needs of both new recruits and experienced first responders.

- **Firefighting**
  - Firefighter I
  - Firefighter II
- **Hazardous Materials**
  - Operations
  - Technician
  - Decontamination
- **Driver - Operator**
  - All Vehicle - Apparatus
  - Aerial Apparatus
  - Pumping Apparatus
  - Basic Pump Operations
- **Technical Rescue**
  - Rescue Systems I
  - Rescue Systems II
  - Introduction to Technical Rescue Skills
- **Firefighter III**
  - Confined Space Rescue
  - Trench Rescue
  - Rope Rescue
  - Ice Rescue
  - Swift Water Rescue
- **Aircraft Rescue Firefighter NFPA 1003**
- **Rapid Intervention Team**
- **Wildland Firefighter I & II**
- **Industrial Training**

Bureau of Certification and Support

- **Fire Officer I & II**
- **Fire & Emergency Services**
  - **Instructor I**
  - **Instructor II**
  - **Instructor III**
- **Fire Inspector I & II**

Other Programs

- **Special Interest Seminars**
- **Fire Dept. Promotional Testing Services**
- **National Fire Academy**
  - Direct Delivery
  - Regional Delivery
  - Two-State Weekend
  - T.R.A.D.E.

Education and Training

The NH Division of Fire Standards and Training and Emergency Medical Services (FSTEMS) offers a diverse catalog of Fire and EMS training courses online, at the academy, and throughout the community. The Academy's online courses are accessible through the NHOODLE Online Learning Academy. During 2017, there were 784 authorized courses available throughout NH in the following topics:

Course Topic	Authorized Courses	# of Students
Emergency Preparedness	51	1075
EMS	424	10940
Fire & Rescue	127	2010
Hazardous Materials	45	610
Incident Command	10	200
Industrial Training	16	243
Instructor Development	35	311
Seminars	38	685
Leadership/Management	9	116
Total	**753**	**16190**

Capital Equipment and Training Resources

In 2017, the Division obtained the following capital resources to support training and certifying emergency responders:

- Engine #3 - for use in Fire Certification, Driver/Op courses and other fire response training
- Fire Drillyard Improvements - gravel landscaping, organizational & building improvements
- Full featured Zoll Cardiac Monitor for use in EMS Simulation Manikin scenarios
- Upgrade of existing high-fidelity adult simulator manikin software and components
- Aircraft Rescue Fire Fighting (ARFF) Drillyard refurbishments including an update to the Electronic Control Systems

Bureau of EMS

The Division's Bureau of EMS (BEMS) works in conjunction with public and private agencies in a cooperative effort to plan and provide the most appropriate emergency medical care to New Hampshire's residents and visitors. The Bureau consists of 3 main units:

- **Clinical Systems**
  - Trauma, Stroke and STEMI
  - Patient Care Protocol Management
  - Mobile Integrated Health Care
  - Critical Care / PIFT
- **Data Management**
  - TEMSIS Database
  - Data Analysis and Reporting
- **EMS Operations**
  - Licensing
  - Inspections
  - Education
  - Regulation

EMS Courses	2017
EMS Continuing Education	24
EMS Evaluator Training	22
EMS Initial Training	89
EMS Instructor/Coordinator	9
EMS Refresher Training	42
EMS Scope of Practice Programs	172
eLearning EMS Training	36
Total EMS Courses	**424**

NH TEMSIS

New Hampshire's Trauma & EMS Information System

In addition to licensing and certifying EMS providers, the Bureau of EMS also oversees the collection and management of all emergency medical care data supplied by EMS providers in New Hampshire. Our Trauma and EMS Information System, or NH TEMSIS, is a secure, web based, mandatory electronic reporting system that is provided free of charge to every EMS service in the state.

Looking back, TEMSIS has advanced significantly as the following milestones attest:

- ⇒ 2005 -TEMSIS went live
- ⇒ 2006 - NH was the 2nd state to submit EMS data to NEMSIS the National EMS Repository
- ⇒ 2010 - TEMSIS went 100% electronic with an intuitive and dynamic runform
- ⇒ 2016 - Multiple improvements, including migration to the NEMSIS V3 dataset, resulted in the development of TEMSIS Elite - allowing the software to work with all devices and internet browsers

Currently, NH TEMSIS continues to evolve as a cutting edge tool for NH's EMS providers as evidenced by the growing collection of awards the Bureau's staff has received from their peers nationally, in recognition of several EMS data innovations.

Congratulations to Todd Donovan, our Data Specialist, and Chip Cooper, our EMS Data Manager, whose hard work and innovation culminated in the receipt of the 2017 New Frontier Award. Also known as the Hooley Award, this special honor is presented each year to individuals who go above and beyond the call of duty by using EMS data in ground breaking ways that help provide the best possible care to their community.

Todd's brilliant RODS formula, or Revised Overdose Score, measures changes in alertness and respiration rates. RODS is used by Chip's team to analyze and evaluate patient improvement after treatment with Narcan. Especially useful in Opioid overdose incidents, RODS helps identify and track the number of patients whose lives were saved after Narcan was administered.

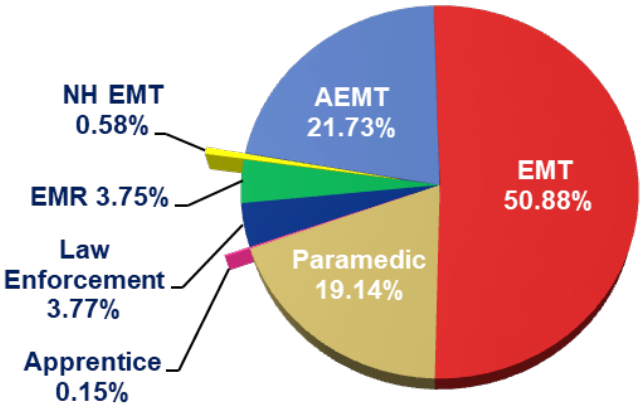
2017's Hooley for the RODS formula was the 3rd year in a row that Chip's team was recognized for their innovative use of EMS data.

EMS Providers

New Hampshire's EMS providers and community responders are committed to protecting the health and safety of community members. In 2017, almost 6,000 providers were licensed to deliver various levels of high quality, emergency medical care.

Providers licensed as Emergency Medical Responders (EMR), Emergency Medical Technicians (EMT), Advanced Emergency Medical Technicians (AEMT), and Paramedics are required to have their National Registry Certification.

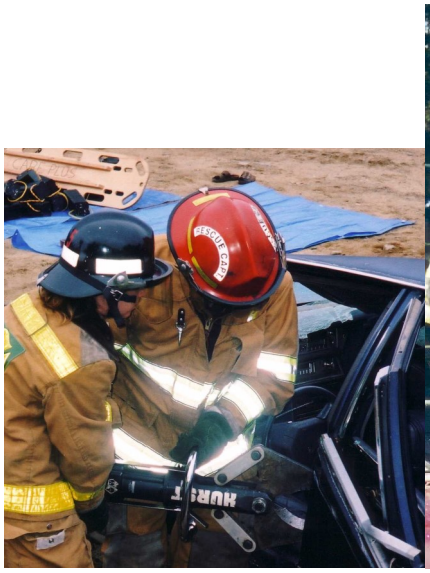
2017 Licensed Providers & Responders



Provider Type	Count
EMT	3051
AEMT	1303
Paramedic	1148
EMR	225
Law Enforcement	226
NH EMT	35
Apprentice	9
Total Providers	**5997**

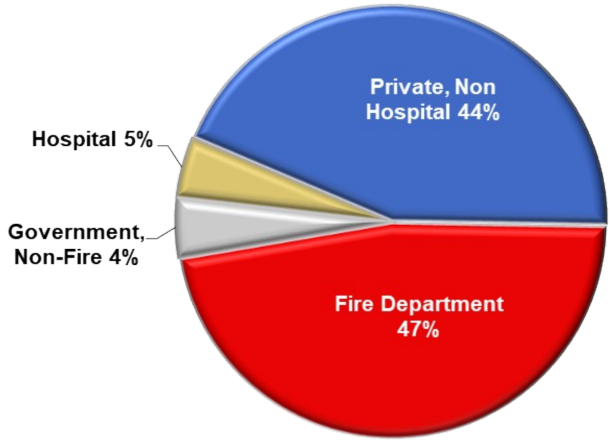
The following levels, specific to NH, are not required to hold a National Registry Certification:

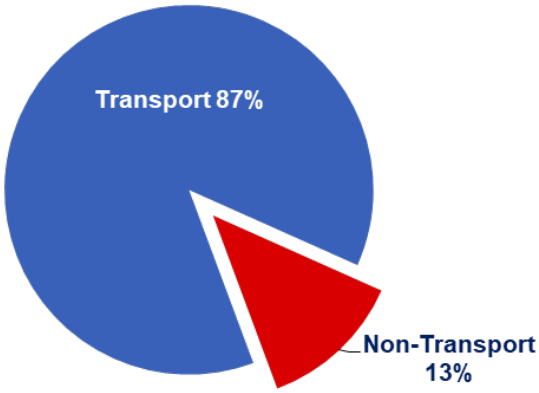
- **Law Enforcement Providers (LEO)** are required to maintain a focus on CPR and Narcan administration.
- **NH EMTs** are a grandfathered level who must maintain continuous annual certification of their EMT-basic skills and knowledge in order to retain this license status.
- **Apprentices** are under 18 years old and certified in CPR



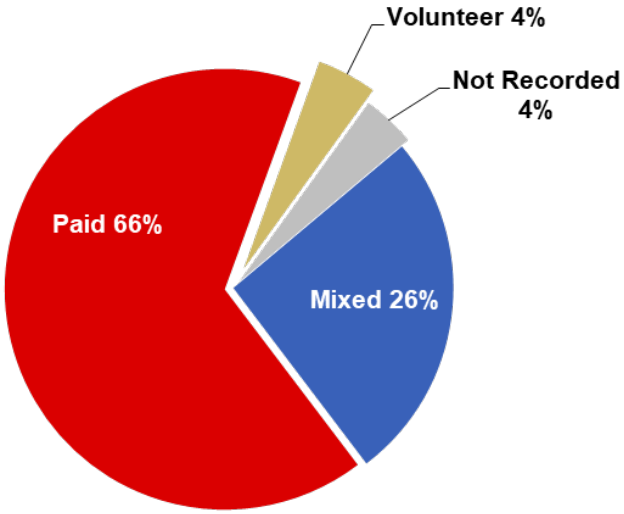
Organizational Types

91% of the emergency calls in New Hampshire were covered by EMS responders based in fire departments or private agencies.





18 services include Law Enforcement Officers (LEO) among their EMS providers.



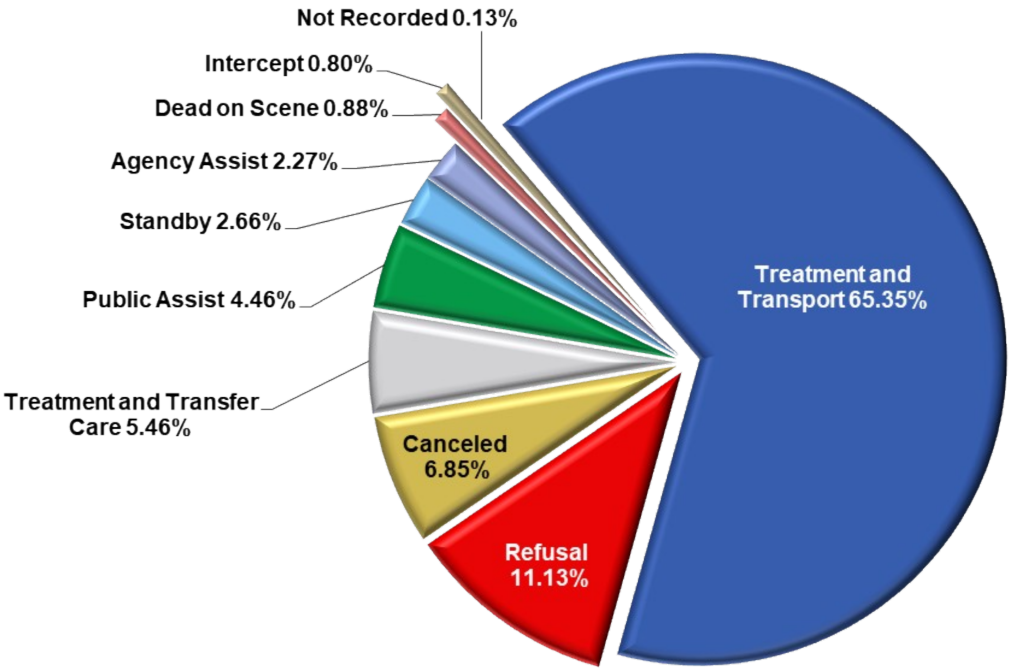
More in-depth service agency information such as total runs reported and average validity scores may be viewed online in our graphs gallery which is located at:

https://nhfa-ems.com/ems-resources/temsis-graphs-gallery/

Patient Disposition

The data below represent the nature of possible actions taken by EMS responders. Out of 248,493 dispatched calls in 2017, responders provided treatment in more than 71% of the incidents.

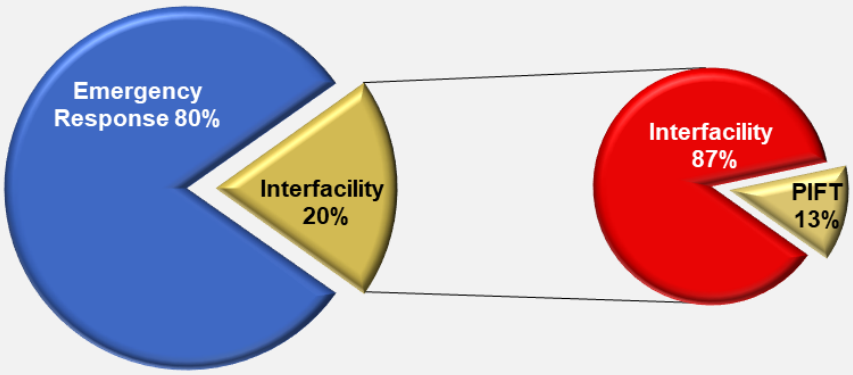
Patient Dispositions by percentage



80% of dispatched calls were 911 emergencies.

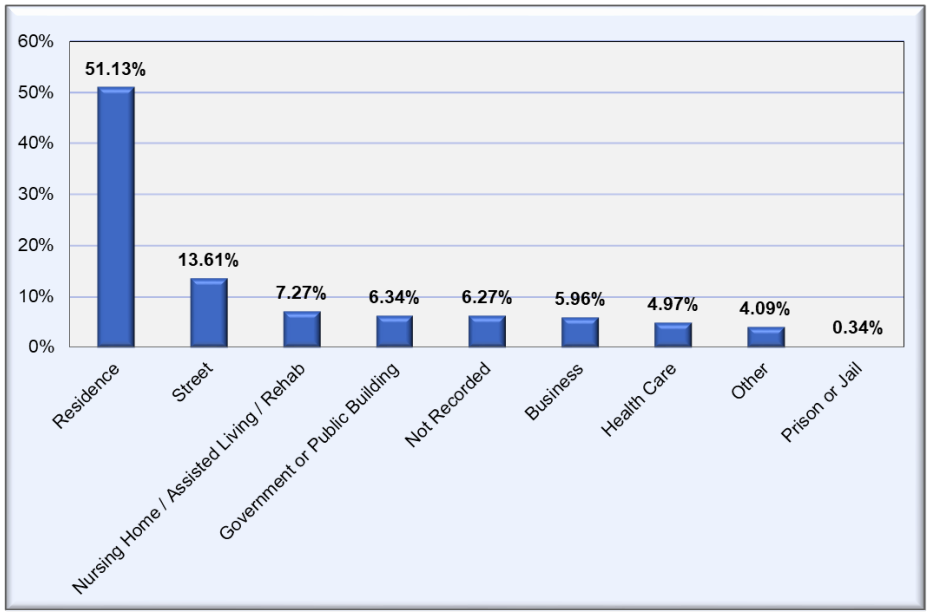
20% of all patient transports were interfacility transfers. Among those, **13%** required advanced care by paramedics as outlined below.

Calls by Incident Type

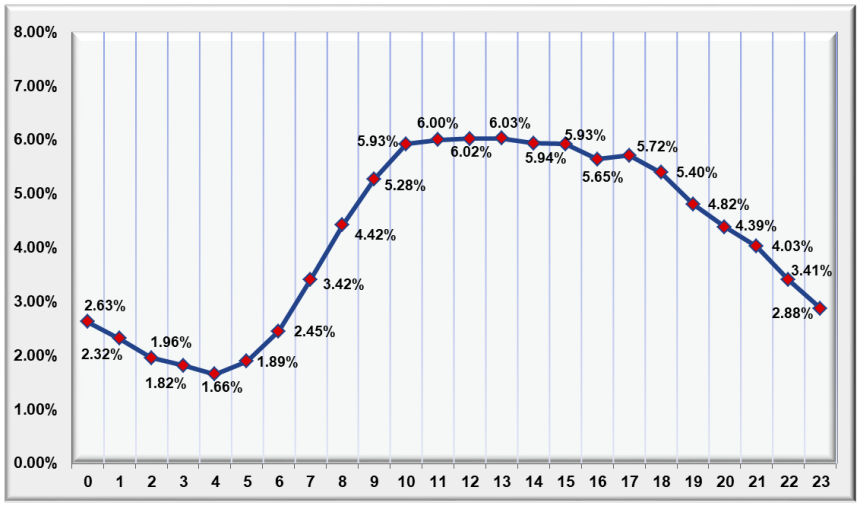


Incident Descriptors

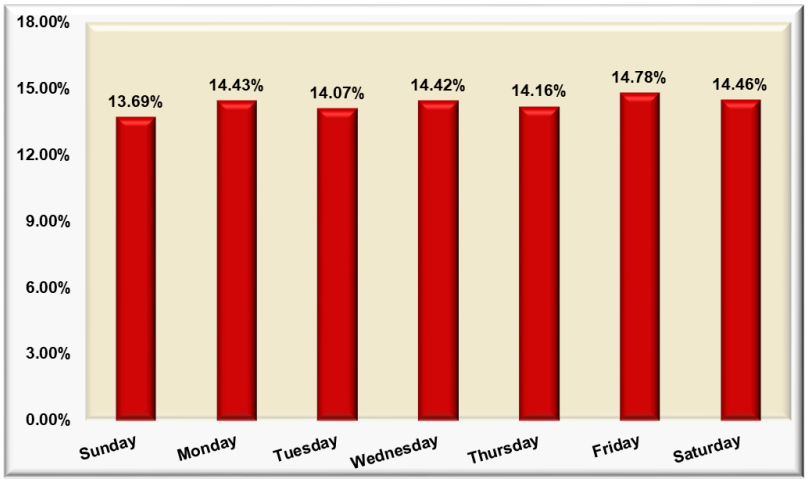
Top 911 Incident Location Types



911 Calls by Hour of Day

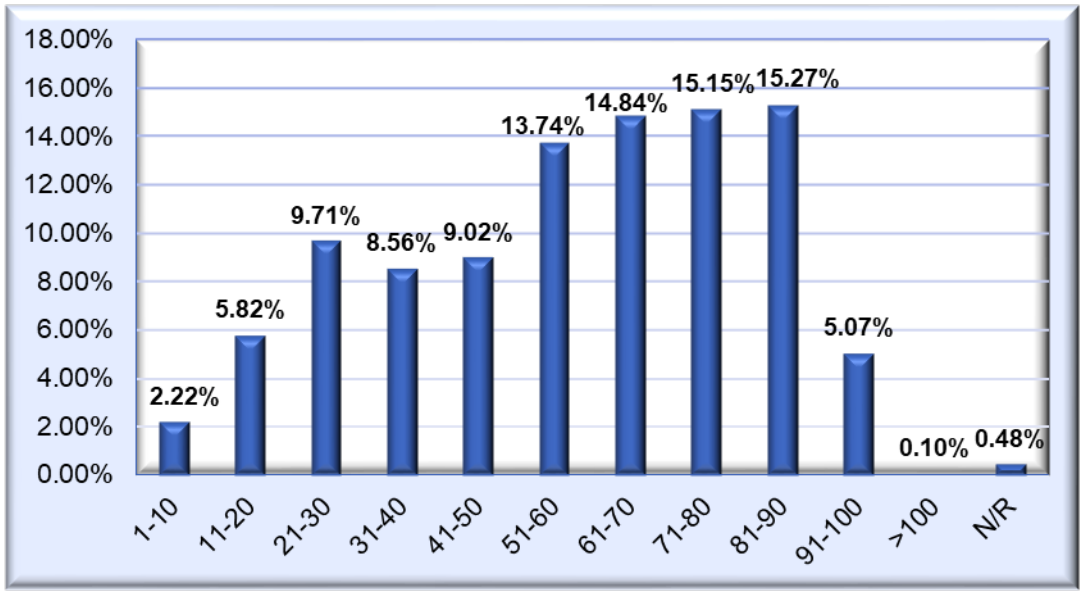


911 Calls by Day of Week

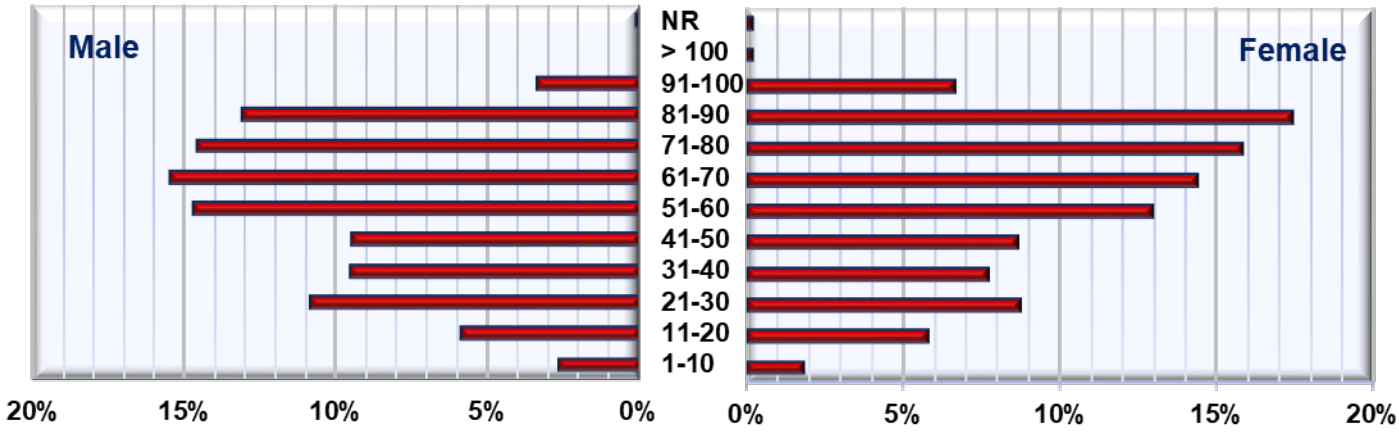


Incident Descriptors (continued)

Calls by Age Group



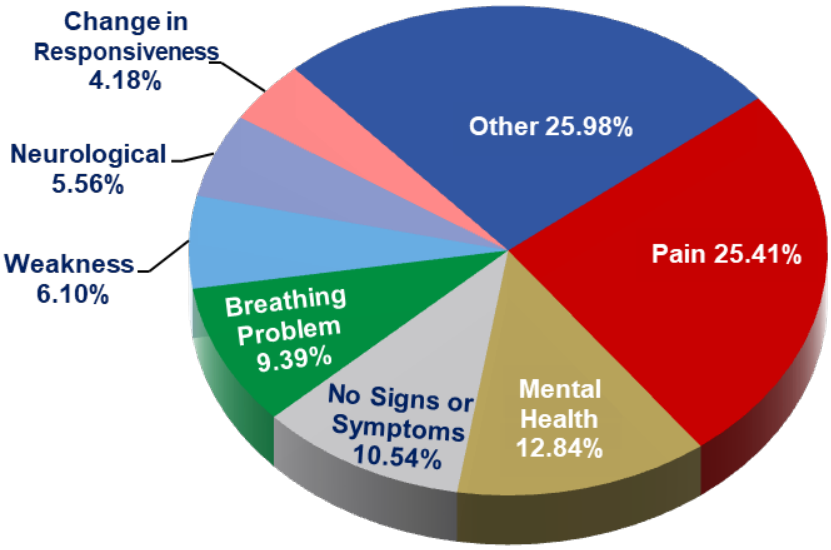
Calls by Gender & Age



Diagnoses vs. Symptoms

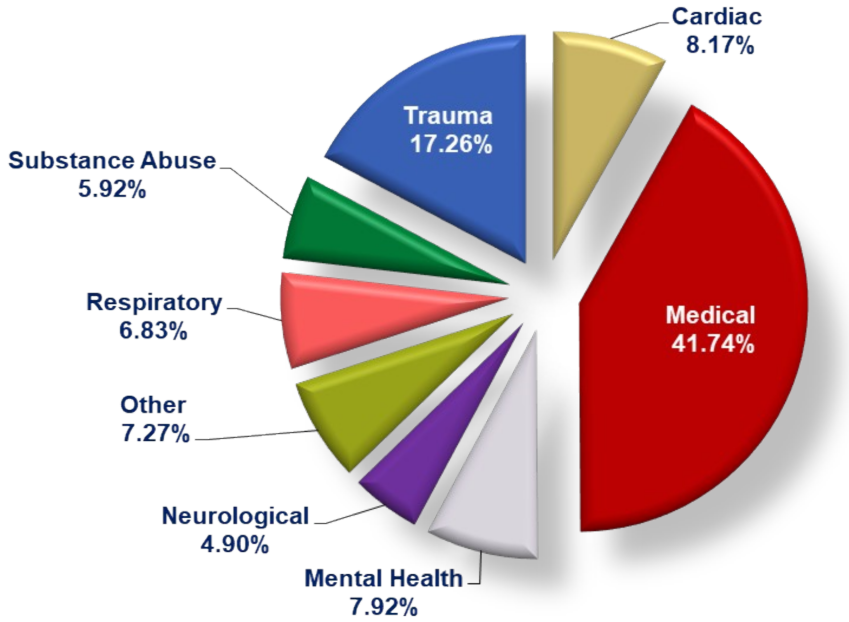
Pain was the leading symptom reported by patients.

Top Symptoms (911)



EMS provider diagnoses on calls involving patient contact

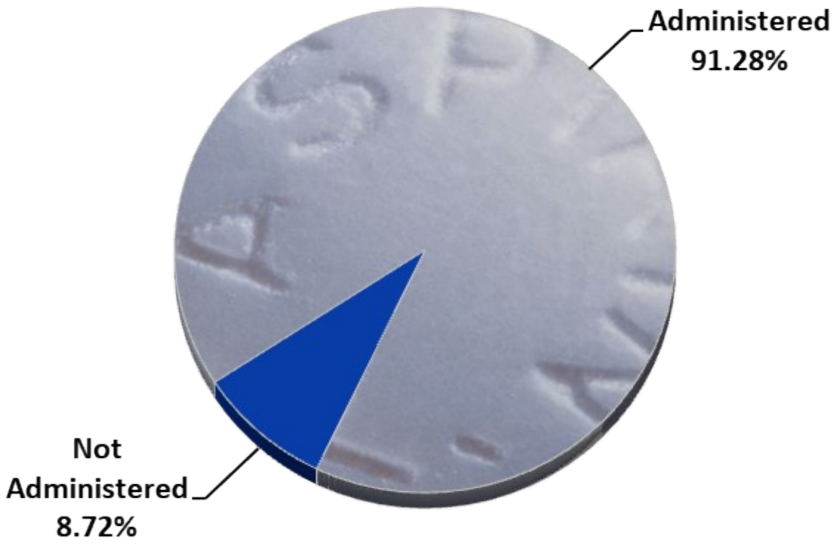
Top Working Diagnoses (911)



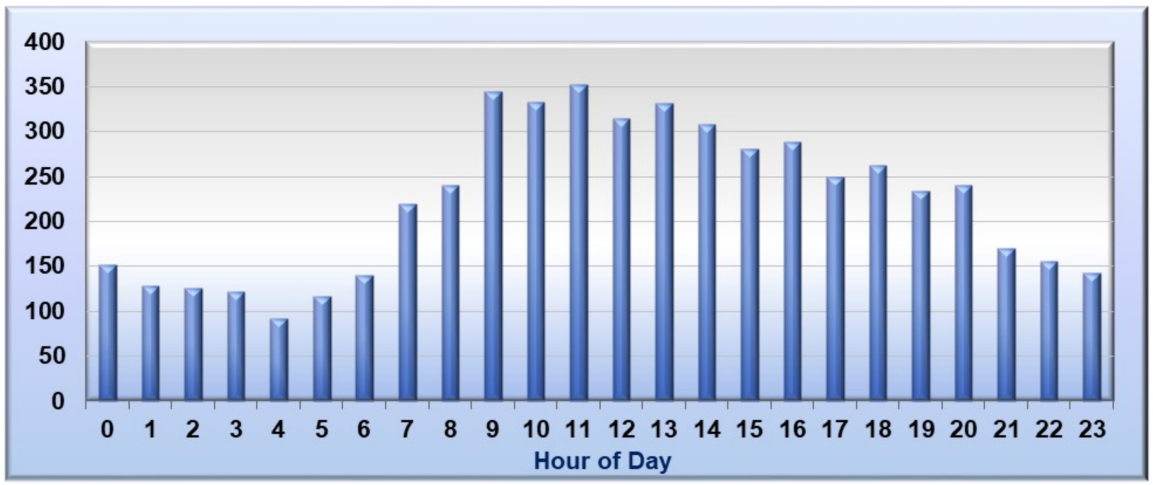
Aspirin Administration Rate

In 91% of cardiac related incidents Acetylsalicylic Acid (ASA) was either administered by EMS, taken by the patient prior to EMS arrival, or contraindicated. NH EMS providers continue to diligently document effectively that patients received ASA, regardless of how or when it was administered during the incident. Ongoing review of this benchmark is vital due to the clear standard of care recommended by the American Heart Association (AHA).

Aspirin Administration Rate for Cardiac Chest Pain



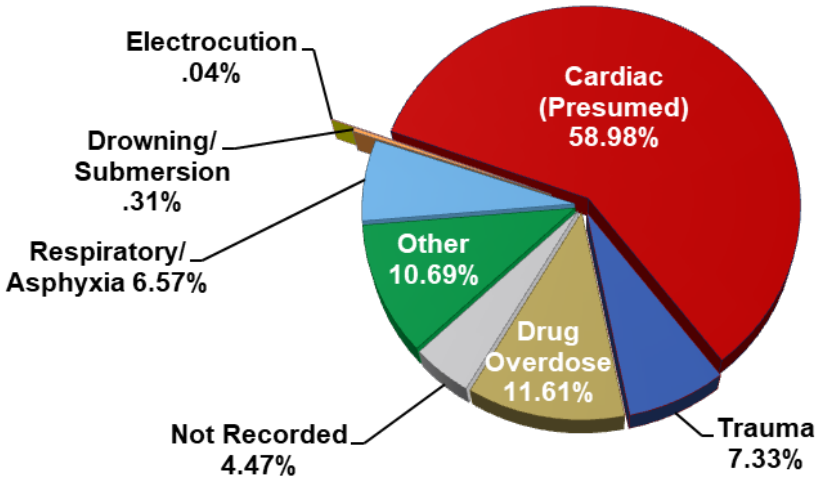
Chest Pain by Hour of Day



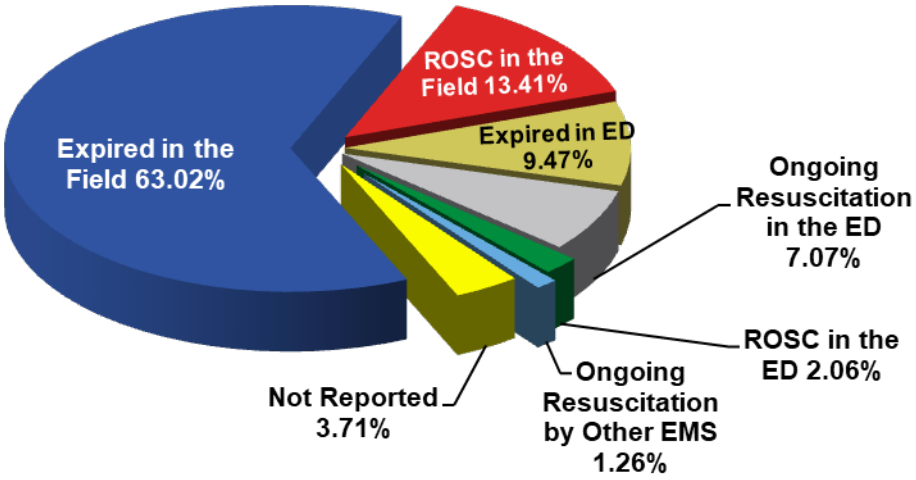
Cardiac Arrest

These charts represent data from services reporting in Elite only (NEMSIS V3.4). As a result, data from the cities of Manchester, Nashua, and Rochester are not included; as agencies in those areas are still using NHTEMSIS V2, which only includes a limited number of cardiac arrest fields matching V3.4.

Cardiac Arrest Etiology



Cardiac Arrest Outcome



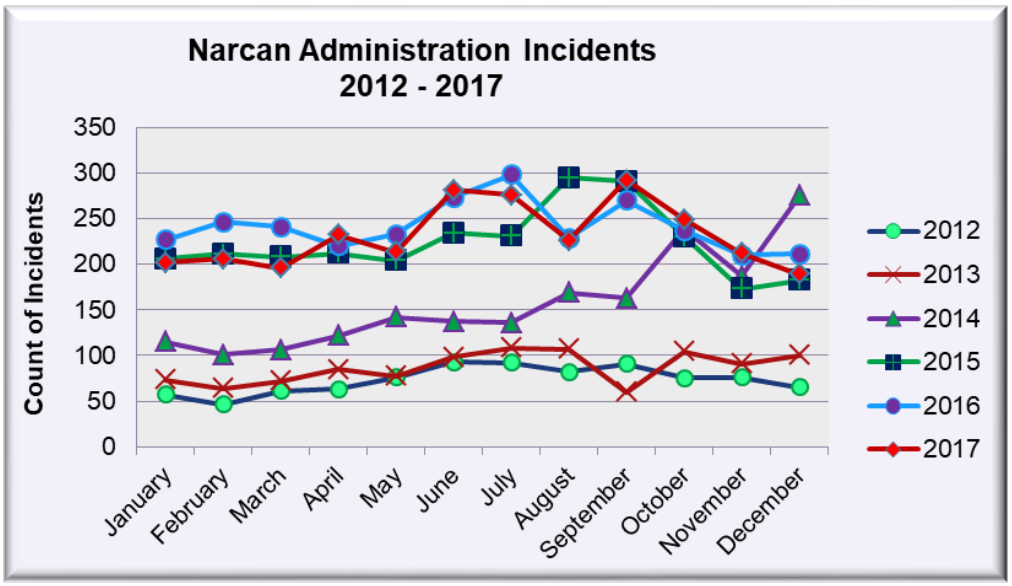
ROSC = Return of Spontaneous Circulation

ROSC indicates that the patient regained a pulse. It does not necessarily reflect the final survival outcome.

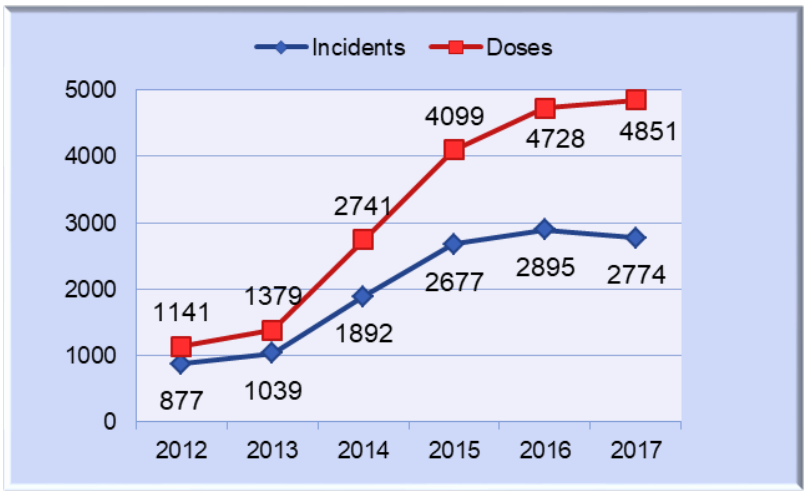
Narcan Administration

While New Hampshire experienced a decrease in opioid overdoses during 2017, the average number of incidents involving narcan administration is still more than 3 times higher than 2012.

73 per month in 2012
vs.
231 per month in 2017



Narcan Doses vs. Incidents



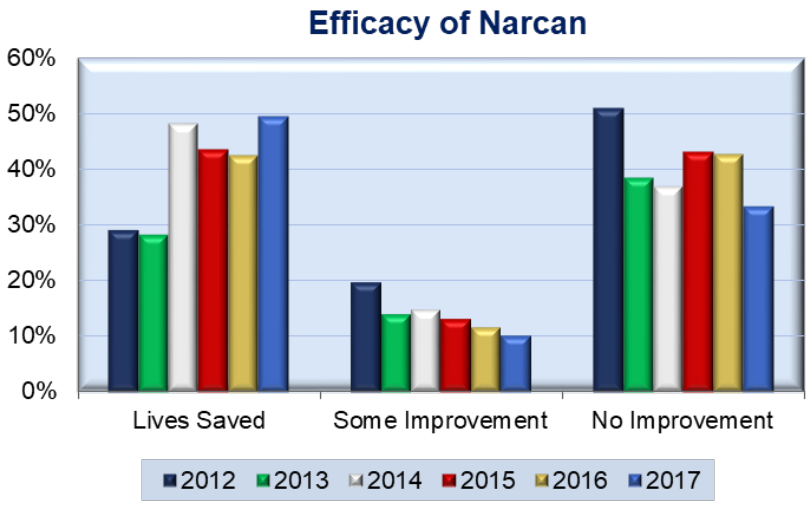
Average Doses per Incident

2012 = 1.3
2017 = 1.7

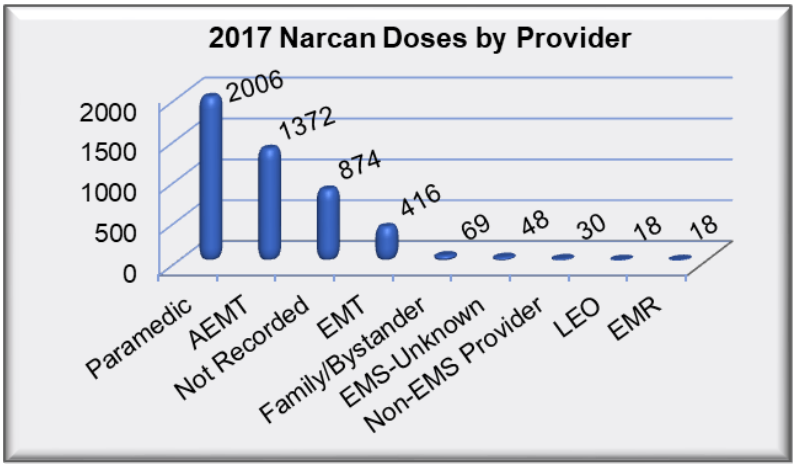
Narcan Administration

It's common knowledge that Narcan is used for obvious overdoses based on indications at the scene. But, it may also be given for changes in alertness and respiratory rate where providers cannot identify other specific medical reasons for the changes that do not involve opiates, such as a stroke or seizure.

Therefore, it cannot be concluded that all of the reported Narcan incidents actually involved drugs.

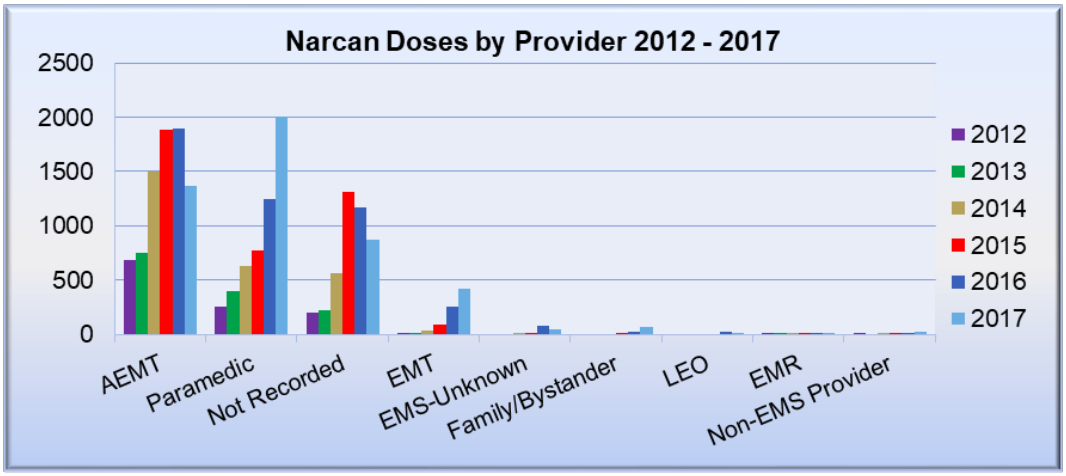


However, Revised Overdose Score (RODS) outcomes of "Lives Saved" and "Some Improvement" following Narcan use may suggest a better indicator of opiate involvement as a cause for these changes. RODS outcomes are calculated based on the changes in alertness and respiratory rates before and after narcan administration.



2017 Doses by Provider

Paramedic = 41%
AEMT = 28%
EMT = 9%
Other = 22%



FIRE STANDARDS AND TRAINING

NH

EMERGENCY MEDICAL SERVICES